

Serial No. 10/716,209
Attorney Docket No. H0680
Firm Reference No. AMDSPH0680US

Reply to Office Action Dated August 23, 2004
Reply Dated October 31, 2004

REMARKS

Following entry of this amendment, claims 1-8 and 10-16 will be pending. Claim 17 has been withdrawn. Claim 9 has been cancelled without prejudice or disclaimer. Claims 1 and 16 have been amended to include the features of cancelled claim 9. Claim 10 has been amended to depend from amended claim 1.

I. AFFIRMATION OF ELECTION

The Examiner required election to one of the following groups:

Group I: Claims 1-16;
Group II: Claim 17.

The Applicants affirm the election made with traverse to prosecute Group I. It is requested that non-elected claim 17 remains in this application at this time.

II. REJECTION OF CLAIMS UNDER 35 U.S.C. § 102

Claims 1-3, 14, 15 and 16 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Boyd, U.S. Patent No. 6,461,529 ("Boyd"). Claims 1-3, 6, 13, 14, and 16 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Sitaram, U.S. Patent No. 6,723,657 ("Sitaram")¹.

Withdrawal of the rejection is respectfully requested for at least the following reasons.

Boyd discloses etching of a nitride layer incorporated in a process for making a metal oxide semiconductor field effect transistor (MOSFET). See, for example, FIGS. 5A-5L, Col. 7, ln. 23 to Col. 9, ln. 42. Boyd further discloses the formation of a MOSFET begins with a substrate 130. The substrate 130 is a semiconductor substrate such as a silicon substrate. See, for example, Col. 7, lns. 24-26. Next, Boyd discloses the substrate 130 is covered by a pad oxide layer 135 and a silicon nitride layer 131. See, for example, FIG. 5A and Col. 7, lns. 27-28. Further, Boyd discloses a photo-lithographic process is used to define the shape of gate pillars to

¹ The rejection in the Office Action (OA) rejects claims 1-3, 6, 14 and 16. See page 4 of the OA, line 1 of paragraph 8. However, the Examiner refers to claim 13 in the argument. See page 4 of the OA, line 3 of paragraph 8. Therefore the rejection is being treated as a rejection of claims 1-3, 6, 13, 14 and 16.

Serial No. 10/716,209
Attorney Docket No. H0680
Firm Reference No. AMDSPH0680US

Reply to Office Action Dated August 23, 2004
Reply Dated October 31, 2004

be formed. See, for example, FIG. 5G and Col. 8, lns. 37-39. Boyd also discloses gate conductor material 141 is deposited in gate hole 150 and within uppermost silicon nitride layer 138 of a dielectric stack. See, for example, FIG. 5I and Col. 9, lns. 32-36.

Sitaram discloses a method for the fabrication of a gate stack that uses a combination of a damascene process and a CMP process to produce a gate stack which includes a polysilicon section, a silicide section and a covering-layer section thereabove. Further, Sitaram discloses an etching step is used to etch a silicon nitride layer 13 using a patterned photoresist layer 9. Subsequently, the photoresist layer 9 is removed. Sitaram also discloses an opening 14 is formed by the preceding etching step and a surface of a remaining silicon nitride layer 13 is covered with a titanium or cobalt layer 15. See, for example, Abstract, FIG. 2 and Col. 2, lns. 46-67.

However, neither Boyd nor Sitaram disclose a substrate that comprises a **germanium-on-insulator (GOI)** structure.

Claims 1 and 16 as amended recite, *inter alia*, "the substrate comprises a **germanium-on-insulator (GOI)** structure including: a semiconductor substrate; an insulating layer disposed over the semiconductor substrate; and a semiconductive layer comprising **germanium (Ge)** disposed over the insulating layer." (emphasis added). In contrast, Boyd discloses the substrate 130 to be a silicon substrate (bulk substrate). See, for example, FIG. 5G and Col. 7, lns. 24-26. Sitaram does not specify a material for a substrate 10 at all. Sitaram appears to illustrate a bulk substrate. See, for example, FIGs. 1-2 and Col. 2, lns. 50-51.

With regard to the features of claim 9 amended into claim 1, the Examiner admits Boyd fails to disclose a substrate consisting of GOI comprising crystalline Ge. Further, the Examiner is silent as to Sitaram disclosing a substrate consisting of GOI comprising crystalline Ge. Thus, the Examiner contends Cheng discloses a substrate consisting of GOI. The Applicant respectfully disagrees.

Cheng discloses, at least in the part of the reference cited by the Examiner, a relaxed $\text{Si}_{1-x}\text{Ge}_x$ **on-insulator (SGOI)**. See, for example, the Abstract, Figs. 1A-1C and Col. 1, lns. 17-25. Claim 1 as amended recites a GOI substrate "... comprising **germanium (Ge)** disposed over the insulating layer." A relaxed $\text{Si}_{1-x}\text{Ge}_x$ **on-insulator (SGOI)** is not understood by one of ordinary skill in the art to be equivalent to a GOI substrate comprising **germanium (Ge)**.

Serial No. 10/716,209
Attorney Docket No. H0680
Firm Reference No. AMDSPH0680US

Reply to Office Action Dated August 23, 2004
Reply Dated October 31, 2004

Therefore, since neither Boyd nor Sitaram teach or suggest one or more of the features as claimed in amended claims 1 and 16, claims 1 and 16 and the claims that depend therefrom are patentable over Boyd or Sitaram alone or in combination with Cheng.

III. REJECTION OF CLAIMS UNDER 35 USC §103

Claims 4 and 5 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Boyd or Sitaram in view of "Shipley Announces New Dual Purpose Spin-On Anti-Reflection Coating for Device Fabrication." ("Shipley") New Release from www.rohmhass.com, May, 2002. Claim 7 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Boyd. Claim 8 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Boyd and further in view of Clevenger, U.S. Patent No. 6,563,160 ("Clevenger") Claims 9 and 10 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Boyd and further in view of Cheng, U.S. Patent No. 6,737,670 ("Cheng"). Claims 11 and 12 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Boyd and further in view of Hseih, U.S. Patent Application Publication No. 2003/0109111. Withdrawal of the rejections is respectfully requested for at least the following reasons.

Claims 4-5, 7-8 and 10-12 depend from amended claim 1 and are patentable for at least the reasons discussed above with regard to amended claim 1. That is, Shipley, Clevenger, Cheng or Hseih do not make up for the deficiencies of Boyd or Sitaram. Specifically, Shipley, Clevenger or Hseih do not disclose a GOI substrate at all. Cheng, as discussed above with regard to amended claim 1, does not disclose a GOI substrate as recited in amended claim 1.

Therefore, since Boyd or Sitaram alone or in combination with Shipley, Clevenger, Cheng or Hseih do not teach or suggest one or more of the features as claimed in amended claim 1, 4-5, 7-8 and 10-12 that depend therefrom are patentable over Boyd, Sitaram, Shipley, Clevenger, Cheng and Hseih, alone or in combination.

IV. CONCLUSION

In light of the foregoing, it is respectfully submitted that the present application is in condition for allowance and notice to that effect is hereby requested. If it is determined that the

Serial No. 10/716,209
Attorney Docket No. H0680
Firm Reference No. AMDSPH0680US

Reply to Office Action Dated August 23, 2004
Reply Dated October 31, 2004

application is not in condition for allowance, the Examiner is invited to initiate a telephone interview with the undersigned attorney to expedite prosecution of the present invention.

Any fee(s) resulting from this communication is hereby authorized to be charged to our Deposit Account No. 18-0988; Our Order No. H0680 (AMDSPH0680US).

Respectfully submitted,
RENNER, OTTO, BOISSELLE & SKLAR, LLP


Andrew Romero, Reg. No. 43,890

1621 Euclid Avenue, 19th Floor
Cleveland, Ohio 44115-2191
Telephone: (216) 621-1113
Facsimile: (216) 621-6165

R:\ARomero\Cases\AMDSPH0680US\Reply to Non Final Office Action dated August 23 04.doc

**This Page is Inserted by IFW Indexing and Scanning
Operations and is not part of the Official Record**

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ **BLACK BORDERS**
- ☐ **IMAGE CUT OFF AT TOP, BOTTOM OR SIDES**
- ☐ **FADED TEXT OR DRAWING**
- ☐ **BLURRED OR ILLEGIBLE TEXT OR DRAWING**
- ☐ **SKEWED/SLANTED IMAGES**
- ☐ **COLOR OR BLACK AND WHITE PHOTOGRAPHS**
- ☐ **GRAY SCALE DOCUMENTS**
- ☐ **LINES OR MARKS ON ORIGINAL DOCUMENT**
- ☐ **REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**
- ☐ **OTHER:** _____

IMAGES ARE BEST AVAILABLE COPY.

As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.